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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/091,508 10/30/98 CONNORS

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EXAMINER

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WASHINGTON DC 20005

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ART UNIT	PAPER NUMBER
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1723

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DATE MAILED: 10/27/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/091,508

Applicant(s)
Connors et al.

Examiner
Marianne S. Ocampo

Group Art Unit
1723

☒ Responsive to communication(s) filed on Oct 30, 1998.

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-13 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-13 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5 & 6

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Art Unit: 1723

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of improper form. For a claim to be in proper dependent form, it should include all of the limitations of the independent claim it depend therefrom. Claim 13 only includes part of the limitations (the end caps) in independent claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claim 10 recites the limitation "the first opening" in line 4. There is insufficient antecedent basis for this limitation in the claim, since there are no other openings mentioned.

Art Unit: 1723

b. Claim 13 recites the limitation "the first segment" in line 3. There is insufficient antecedent basis for this limitation in the claim. In addition, claim 13 recites the limitation of "end cap of claim 1" in line 3. It is unclear as which of the end caps mentioned in claim, this particular limitation is referring to. Is it one of the first and second end caps? Or is it referring to one of the joiner caps which is attached to one end of each of the pack sections?

Claim Rejections - 35 USC § 102

4. The following quotation of the appropriate paragraphs of 35 U.S.C. 102 form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 2, 6 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Taga (U.S. 4,680,118).

Art Unit: 1723

Taga (118) discloses a cartridge filter ("separation system or assembly") comprising a pleat-type porous membrane ("separation element/porous medium", 4) having first and second ends (upper and lower ends), and an interior, wherein the porous membrane/medium (4) is made of polytetrafluoroethylene (TFE) material, as in col. 3, lines 1 - 6 and in fig. 1. Taga also discloses the filter having two end caps (13) disposed (attached) on both ends (upper and lower ends) of the porous membrane (4), wherein a first segment (13) is mounted to the first (upper or lower) end of the porous membrane ("separation pack", 4), as in fig. 1. Taga further discloses the cartridge filter ("hollow pleated pack/separation assembly/system) having a length of 1000 mm (39.4 in.) , and an interior/core diameter of 200 mm (7.87 in.). In addition, Taga discloses large size cartridge filters being available with length of 40 in., and even larger filters by combined filters with each other for an even greater filtering area and longer length, in col. 5, lines 33 - 43 (claim 2). Furthermore, Taga discloses a support cage (18) being disposed on the outer periphery of the pleats of the membrane (4), as in figs. 1 and 4, and a cylindrical body ("housing", 1) having an opening ("inlet", 1a) and a passage ("outlet", 19) defining at least one fluid path, wherein the separation element or membrane (4) is disposed therein, as in fig.1 and cols. 3 - 4 (claim 6).

6. Claim 4 is rejected under 35 U.S.C. 102(b) as being anticipated by Connors, Jr. (U.S. 5,435,915).

Art Unit: 1723

Connors, Jr. (915) discloses a separation element (filter units/stack, 10) comprising a filter pack/unit (10) including a porous medium (11) and a first end (top end), and an end cap (20, 60) having a first segment (60), a second segment (20) mounted to the first end (top end) of the first of two or more filter units (10), and a sealing member (17) coupled to at least one of the first and second segments. Connors, Jr. also discloses the first segment being slidably engaged to the second segment such that the first segment (60) is movable between first and second positions by the action of a spring member (28), such that in the first (open) position, the sealing member (17) is relaxed, and in the second (sealed) position, the sealing member (17) is compressed by the first and second segments (20, 60), thereby energizing the sealing member (17) and providing a fluid-tight seal, as seen in figs. 3 and 4 (claim 4).

7. Claims 3 and 12 are rejected under 35 U.S.C. 102(e) or (a) as being anticipated by Smith et al. (U.S. 5,779,903).

Smith et al. (903) teach a filter assembly having a pleated filtering element (45) which comprises a corrugated or pleated filter material ("porous medium/pack" 46) having a first end (top end), and an end cap (10) including a first segment (11, 12) mounted to the first end (top end) of the filtering element (45, 46). Smith et al. disclose the end cap (10) also having a second segment (21, 24) which has the sealing surfaces (25, 26) spaced from the first segment (11, 12) and the top/first end (surface) of the filtering element (46), as in figs. 1 and 5. Smith et al. further

Art Unit: 1723

disclose the first and second segments are spaced a first distance (prior to differential expansion due to heat/steaming step) from each other, and the end cap flange/second segment (21, 24) extending or expanding (moving) to a second position in which the first and second segments are spaced a second distance which is farther/greater than the first distance, as in col. 1, lines 54 -55 and col. 4, lines 1 - 10 and in figs. 1 and 5 (claims 3 and 12).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Connors, Jr (U.S. 5,435,915) in view of Taga (118).

Connors, Jr. (915) discloses a separation element (filter stack) comprising the following:

a) at least two filter units ("hollow pack sections", 10), wherein each filter unit has first and second ends, an interior, and a filter element ("porous medium", 11);

Art Unit: 1723

b) end connectors ("joiner caps", 20, 30) being attached to at least one end of each of the two filter units (10), and adjacent end connectors/joiner caps (20, 30) being connected to coaxially secure the filter units (10) and joiner caps (20, 30) into a filter stack or hollow separation arrangement, as seen in figs. 3 - 4; and

c) first and second end caps (20, 60, 30) being attached to the filter stack/hollow separation arrangement, wherein the first end cap (20) comprises a seal (sealing connector, 60) having an outer diameter greater than the largest diameter of the "hollow separation arrangement" or filter stack, as in figs. 2 - 5. However, Connors, Jr. fails to disclose the porous membrane/medium comprising a polymeric material or glass fiber material, the hollow separation arrangement having a length of about at least 40 inches, and an interior diameter of at least about 2 inches .

Taga (118) teaches a pleated cartridge filter having filter element in the form of a porous membrane (4) with a length of 1000 mm (39.4 in. which is about 40 in.), and a core diameter (interior diameter) of 200 mm (7.9 in.), and teaches the filter/separation element can be made larger and longer by combination of several units of cartridge filters. Taga also teaches the filtering medium (membrane, 4) being made of polytetrafluoroethylene (TFE), and other various polymeric materials such as polyamide, polyester, polypropylene, and nonwoven material of glass fibers, paper or the like.

Art Unit: 1723

It is considered that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the filter/separation element of Connor, Jr. (915), by adding the embodiments of the filter element taught by Taga (118), in order to provide a separation element or filter having excellent physical and chemical properties, thus providing excellent filtering performance than other conventional filters (col 1, lines 20 - 27 and col. 2, lines 24 - 27).

10. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as obvious over Van Ooijen (U.S. 5,344,559).

Van Ooijen (559) discloses a filter cartridge (separation assembly) including a filter element (separation element, 1) having two supporting cages, namely, an outer supporting cage (2) and inner supporting cage (3), as in fig. 1. Van Ooijen discloses the filter element (1) having first and second ends (top and bottom ends) and an interior, as seen in figs. 1 - 4, and made of a wound or creased (pleated, porous) filter medium composed of different materials including glass, ceramics, plastic fibers, cellulose, etc., as in col. 3, lines 30 - 44. Van Ooijen also discloses the filter element (1) having two end caps (annular flanges, 6, 7) connected to an end of the filter element (1), as in col. 3, lines 44 - 50 and fig. 1. Lastly, Van Ooijen discloses the filter element (1) being removably disposed from the supporting cages (2,3), as in col. 4, lines 46 - 52 (claim 5). It is well known in the art that pleated filter elements being available in various forms and sizes (varying length, width, and diameter), such that the desired or preferred length of at least about

Art Unit: 1723

40 inches, and an interior diameter of at least about 2 inches of the pleated filter elements would depend upon the size of the filter housing or cartridge. In other words, smaller filter housings for smaller scale filtrations would require shorter filter elements with smaller interior diameters, and likewise, longer and bigger filter housings for larger scale filtration processes would require filter elements with longer length and bigger diameters (claim 2).

11. Claims 7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Picek (U.S. 5,015,376).

Picek (376) discloses a separation assembly/system (pressure filter) comprising a filter housing (1) having an inlet (2) and an outlet (3) defining a fluid flow path therethrough, and a filter/separation assembly comprising a pleated (porous) filter element (5) and a supporting cage/retaining basket (4), as in fig. 1 - 2. Picek also discloses the separation/filter element (5) being removably mounted in the retaining basket/cage (4), as in col. 3, lines 24 - 30, and comprising a pleated filter pack/stack (18) which is a filter (porous) medium having pleats (16) having an inner area/region (15) and, first and second ends (top and bottom ends), and a retainer (outer support, 10), and lastly, first and second end caps (8, 9) connected to the first and second ends of the pack, respectively, as in figs. 1 - 2. Furthermore, Picek discloses the element (5) being free of any support structure in the inner area (15) of the pack (18), as in fig. 2, and can be used efficiently as an absorbent and/or coalescer cartridge with or without an inner core, as in col.

Art Unit: 1723

2, lines 57 - 60. Although Picek does not disclose the filter pack or element (5, 18) having pleats (16) in a laid-over pleat configuration, it is well-known in the art and obvious that pleated filter packs or media come in various configurations such as laid-over pleat configuration, straight/vertical pleats configuration, and it is the design choice of the manufacturer or user to determine which pleat configuration to make the filter media into (claims 7 and 11).

Moreover, Picek discloses the support cage/basket (4) having a first end (top end), and the filter housing/assembly (1) having a seat arrangement (inner shoulder), and a resilient flange ("seal arrangement") of the first end cap (8) of the filter pack (5, 18) engaging the seat arrangement, as in fig. 2, wherein the filter element (5) is axially movable within the support basket/cage (4). It is obvious after a period of filtering the pleated pack (5, 18) would become loaded, and expand towards the retaining basket/support cage, and thus become closer to an (first) end of the basket/cage (4) than prior to the filtration process (claim 9).

12. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Marshall (U.S. 4,634,527) in view of Van Ooijen (559).

Marshall (527) discloses a fluid filter element having a flange or ring ("end cap", 14, 32) of polyurethane resin or polyester/epoxy resin being mounted to an annulus (10, 36) of pleated filtering material (pack) which is contained within a cylindrical screen/support cage (12, 34).

Art Unit: 1723

Marshall discloses the flange or end cap (14, 32) being provided with two annular seals (26, 50) of neoprene bonded to the flange (14, 32) which allows the filter element to slid along (move) the filter. Marshall discloses the fluid filter element being adapted to be received by (mounted to) a wall ("tubesheet") or tubular holder (16) having an opening (18), as in cols. 1 - 2. However, Marshall fails to disclose the filtering material/element (10, 36) being removably mounted in the cylindrical screen/support cage (12, 34). Van Ooijen (559) teaches a filter cartridge/assembly having a pleated filter medium (1) removably disposed within a supporting cage (2), as in cols. 3 - 4. It is considered that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid filter element of Marshall by adding the embodiment of the filter taught by Van Ooijen, in order to provide a filter element which can be separated into individual components for easy replacement and disposal, as well as cleaning and recycling of other components (col. 1, lines 21 - 67).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo, whose telephone number is (703) 305-1039. The examiner can normally be reached on Monday - Friday from approximately 7:00AM - 3:30PM.

Art Unit: 1723


14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker, can be reached on (703) 308-0457.

15. The fax phone number for **Unofficial** faxes (i.e. faxes not to be entered, drafts) for Technology Center 1700 is **(703) 305-3602**. The fax number for **Official** faxes (i.e. faxes to become part of the file history) for this Center is **(703) 305-3599**. When filing a fax in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

16. Any inquiry of a general nature or relating to the status for this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

M. S. O.

October 25, 1999


W. L. WALKER
PRIMARY EXAMINER
GROUP 1300